Remarks

In the December 23, 2008 office action (the "Office Action"), the Examiner rejected Claims 1-4 under 35 U.S.C 112, first paragraph; Claims 1-4, 6-7, 12, 14-17, 19 and 21-24 as unpatentable over Susnow et al. (US Publication No. 2002/0159385) (hereinafter "Susnow") in view of Ebata (US Publication No. 2003/0174652) (hereinafter "Ebata") under 35 USC 103(a); and Claims 5-8 and 10-24 as unpatentable over Susnow in view of Ebata and further in view of Stoevhase et al.(US 5,748,612) (hereinafter "Stoevhase").

Applicant has amended Claims 1-6, 11, and 18 to further clarify the invention. New claims 29-32 are presented. No new matter is added. Claims 1-8, 10-24 and 29-32 are now pending, of which Claims 1, 5, 11 and 18 are independent claims. Applicant respectfully requests allowance of the pending claims based on the remarks below.

Rejection Under 35 USC § 112

The Examiner rejected Claims 1-4 as failing to comply with the written description requirement. More specifically, the Examiner states that "no virtual lane is assigned if the frame is destined for another port of the fibre channel element" is not described in the specification. (See Office Action, Page 3, Section 3). Applicants respectfully submits that support for the amendment is present throughout the specification and at least in paragraphs [0093], [0101], [0102], [0103], [0104], [0115], receive port described in figure 3, transmit port described in Figure 4 and flow diagram for transmitting frame shown in Figure 8, for the following reasons.

Paragraph [0093] describes that the receive ports assign a virtual lane for the received frame. In one example, virtual lanes are assigned based on the hop count to a destination switch. If the destination switch is within the switch that received the frame, then the hop count is 0.

Paragraph [0101] and [0102] describe receive port shown in Figure 3. More specifically, Paragraph [0104] describes that the fibre channel header D_ID field and a look-up table is used to look up the hop count for a frame based on the destination. The hop count number is used to assign a virtual lane. If the port is an ISL, the flow control signal is a VC_RDY primitive containing the assigned virtual lane (302A) when the frame was received. So, if the frame was destined for another port of the fibre channel switch, the hop count would be zero and the assigned virtual lane by the receive port would be zero. Similarly, if the hop count was 1, the assigned virtual lane by the receive port would be 1.

Paragraph [0103] and [0104] describe the transmit port shown in Figure 4. More specifically, in paragraph [0104], the assigned virtual lane 401A is one less than the virtual lane assigned by the receive port. So, if the assigned virtual lane by the receive port is 1, the assigned virtual lane by the transmit port is one less, that is virtual lane VL0. If the assigned virtual lane by the receive port is 0, no virtual lane is assigned by the transmit port, as there is no virtual lane designation of VL-1.

Further, paragraph [0115] describes the flow diagram for selecting a virtual lane and transmitting a frame as shown in Figure 8. More specifically, paragraph [0115] also describes that in one example, the virtual lane is one less than the hop count.

In summary, Applicants respectfully submit that "no virtual lane is assigned if the frame is destined for another port of the fibre channel element" is sufficiently described in the specification to convey to one skilled in the art on how to make and use the invention. The Applicant has amended Claim 1 to further clarify the invention. Applicant respectfully requests the Examiner to withdraw the rejection.

Rejection Under 35 USC § 103(a)

The Examiner rejected Claims 1-4 as unpatentable over Susnow and in view of Ebata under 35 USC 103(a) . Applicant overcomes the rejection based on at least the reasons given below.

Claim 1:

The combination of Susnow and Ebata fails to disclose a "method for processing fibre channel frames, comprising: (a) providing a plurality of virtual lanes to a fibre channel switch element having a plurality of ports, each of the virtual lane configured to transmit one or more frames between a source and a destination; (b) receiving a fibre channel frame at a receive segment of one of the plurality of ports of the fibre channel switch element; (c) determining a hop count for the frame based on a destination identifier value (D_ID) included in a header of the fibre channel frame at the receive segment, with a hop count value indicative of a frame destined for another port of the fibre channel switch element; (d) assigning a virtual lane for the frame based on the determined hop count at the receive segment; (e) modifying the assigned virtual lane at the transmit segment of one of the plurality of ports of the fibre channel switch element if the assigned virtual lane by the receive segment is not indicative of a frame destined for another port of the fibre channel switch element, , and if the assigned virtual lane is indicative of a frame destined for another port of the fibre channel switch element, no virtual lane is assigned to the frame at the transmit segment; (e) determining if the assigned virtual lane at the transmit segment has available credit to transmit the fibre channel frame; and (f) transmitting the fibre channel frame using the assigned virtual lane at the transmit port, if credit is available. (Amended Claim 1, Underlines showing additions).

The Examiner relies on Susnow to disclose a method of a switch element for processing fibre channel frames (Para. 24) comprising assigning a first virtual lane to a frame (Para. 38), determining if the assigned virtual lane has a credit (Para. 49) and transmitting a frame if a credit is available (Para. 38, last five lines). The Examiner further relies on Susnow to disclose that virtual lanes correspond to a source and a destination. (Para. 46, lines 1-4) (See Office Action Page 4, Section 4)

The Examiner admits and Applicant agrees that Susnow does not disclose assigning virtual lanes based on a hop count. The Examiner relies on Ebata to disclose "queuing" based on a hop count (Para. 9) based on a destination identifier value (Para, 31, note: destination address determines hop count-Fig. 3). Further, the Examiner indicates that it would have been obvious to one skilled in the art at the time the invention was made to have a virtual lane (i.e., queue) based on a hop count in order to provide a fair transmission of packets based on their traveled distance (Ebata, paras. 7-8) (See Office Action Page 4, Section 5).

The Examiner also admits that Susnow does not disclose receiving the frames at a fibre channel switch element. However, the Examiner indicates that Susnow discloses an intermediate switch for receiving data according to a virtual lane (para. 29). The Examiner additionally indicates that Ebata discloses queuing by hop count at an intermediary device (Fig. 7). The Examiner concludes that it would have been obvious to one skilled in the art at the time the invention was made to receive data at a switch and transmit the data based on a virtual lane assigned by hop count in the invention of Susnow in order to provide a fair transmission of packets based on their traveled distance (Ebata, paras. 7-8) (See Office Action Page 4, Section 6). Applicant respectfully disagrees.

As admitted by the Examiner, Susnow neither discloses nor suggests assigning a virtual lane for the frame based on hop count at the receive segment that is based on a destination identifier (D_ID). Based on the same reasoning, Susnow does not disclose or suggest "modifying the assigned virtual lane at the transmit segment of one of the plurality of ports of the fibre channel switch element if the assigned virtual lane by the receive segment is not indicative of a frame destined for another port of the fibre channel switch element, , and if the assigned virtual lane is indicative of a frame destined for another port of the fibre channel switch element, no virtual lane is assigned to the frame at the transmit segment" as articulated in amended Claim 1.

Applicant respectfully submits that Susnow is only concerned about a link level packet control mechanism utilized to prevent loss of data packets due to receive buffer overflow at either end of a transmission link. (See Susnow, Paragraph [0001]). Susnow discloses a link level flow control mechanism that utilizes an "absolute" credit based flow control scheme where the receiver on one end of the physical link provides a "credit limit" indicating the total amount of data that the remote transmitter on the other end of the physical link is authorized to send since link initialization. The remote transmitter does not send data packets unless the receiver indicates that it has room to accept such data packets. (See Susnow, Paragraph [0048]. Emphasis added for discussion purposes)

Applicant respectfully submits that Ebata simply does not disclose or suggest "assigning a virtual lane for the frame based on the determined hop count at the receive segment" and "modifying the assigned virtual lane at the transmit segment of one of the plurality of ports of the fibre channel switch element if the assigned virtual lane by the receive segment is not indicative of a frame destined for another port of the fibre channel switch element, if not, no virtual lane is assigned to the frame at the transmit segment". Ebata does not disclose or suggest Claim 1 as

amended because Ebata fails to disclose the use of hop count for assigning virtual lanes at a receive segment of a switch port and modifying the assigned virtual lane at the transmit segment. Ebata discloses a **wireless system** for a multi-hop network and is concerned about multi-hop networks where if the packet size is fixed, it is not capable of guaranteeing maximum throughput for all hop count numbers, resulting in a "throughput gap" among routes of different hop counts. (See Ebata Paragraph [0006]). Ebata attempts to maximize the throughput for each route by **segmenting data** into packets of different sizes according to the hop count number of the route. The **source node determines a packet size that corresponds to the hop count number** by referencing the mapping table. The user data is segmented according to the packet size. The segmented data is packetized and transmitted. (See Ebata Fig. 6 and Paragraph [0008] and [0035]).

In contrast to Ebata, amended Claim 1 is unrelated to segmenting data into different sizes based on hop count because the process in amended Claim 1, assigns a virtual lane based on the hop count determined from a D_ID at the receive segment and modifies the assigned virtual lane at the transmit segment, based upon whether assigned virtual lane by the receive segment is not indicative of a frame destined for another port of the fibre channel switch element, if not, no virtual lane is assigned to the frame at the transmit segment. (Emphasis added for discussion purposes)

In conclusion, Ebata is only concerned about "throughput gap" among routes of different hop count for fixed packet sizes and suggests choosing a packet size based upon hop count and segmenting the data into appropriate packet size based on the hop count. Ebata fails to disclose the concept of a plurality of dedicated virtual lanes, where each virtual lane is assigned to a frame based on a frame's hop count at the receive segment, the assigned virtual lane is modified if the assigned virtual lane is not indicative of a frame destined for another port of the fibre chan-

nel switch element, if not, no virtual lane is assigned to the frame at the transmit segment, as claimed in Claim 1. (Emphasis added for discussion purposes)

Based on the foregoing, the combination of Ebata and Susnow is different from amended Claim 1.

Furthermore, there is no motivation or suggestion to combine the teachings of Susnow with Ebata. The Examiner is reconstructing Applicant's claimed invention based on impermissible hindsight.

Based on the foregoing reasons, Ebata fails to cure the deficiencies of Susnow. Applicant respectfully submits that Susnow alone or in combination with Ebata fails to disclose amended Claim 1. Therefore, Applicant respectfully requests allowance of Claim 1.

Claim 5

Applicant respectfully submits that Susnow alone or in combination with Ebata fails to disclose the method of amended Claim 5 based on at least the reasons provided above with respect to Claim 1. For brevity, Applicant has not reproduced the arguments previously made with respect to Claim 1. Stoevhase does not cure the deficiencies of Susnow and Ebata. Therefore, Applicant respectfully request allowance of Claim 5.

Claim 11

Applicant respectfully submits that Susnow alone or in combination with Ebata fails to disclose the system of amended Claim 11, at least based on the reasons provided above with respect to Claim 1. For brevity, Applicant has not reproduced the arguments previously made with respect to Claim 1. Stoevhase does not cure the deficiencies of Susnow and Ebata. Therefore, Applicant respectfully request allowance of Claim 11.

Claim 18

Applicant respectfully submits that Susnow alone or in combination with Ebata fails to disclose the fibre channel fabric of amended Claim 18, at least based on the reasons provided above with respect to Claim 1. For brevity, Applicant has not reproduced the arguments previously made with respect to Claim 1. Stoevhase does not cure the deficiencies of Susnow and Ebata. Therefore, Applicant respectfully request allowance of Claim 18.

Claims 2-4

Claims 2-4 depend directly or indirectly from Claim 1 and are patentable over Susnow and Ebata for at least the same reasons given above with respect to Claim 1. Therefore, Applicant respectfully requests allowance of Claims 2-4.

Claims 6-8 and 10

Claims 6-8 and 10 depend directly or indirectly from Claim 5 and are patentable over Susnow, Ebata and Stoevhase for at least the same reasons given above with respect to Claim 5. Therefore, Applicant respectfully requests allowance of Claims 6-8 and 10.

Claims 12-17

Claims 12-17 depend directly or indirectly from Claim 11 and are patentable over Susnow, Ebata and Stoevhase for at least the same reasons given above with respect to Claim 11. Therefore, Applicant respectfully requests allowance of Claims 12-17.

Claims 19-24

Claims 19-24 depend directly or indirectly from Claim 18 and are patentable over Susnow, Ebata and Stoevhase for at least the same reasons given above with respect to Claim 18. Therefore, Applicant respectfully requests allowance of Claims 19-24.

New Claims:

Claim 29

Claim 29 depends directly or indirectly from Claim 1 and is patentable for at least the same reasons given above with respect to Claim 1. Therefore, Applicant respectfully requests allowance of Claim 29.

Claim 30

Claim 30 depends directly or indirectly from Claim 5 and is patentable for at least the same reasons given above with respect to Claim 5. Applicant respectfully requests allowance of Claim 30.

Claim 31

Claim 31 depends directly or indirectly from Claim 11 and is patentable for at least the same reasons given above with respect to Claim 11. Applicant respectfully requests allowance of Claim 31.

Claim 32

Claim 32 depends directly or indirectly from Claim 18 and is patentable for at least the same reasons given above with respect to Claim 18. Applicant respectfully requests allowance of Claim 32.

Conclusion

For the foregoing reasons, Applicant believes that Claims 1-8, 10-24 and 29-32 are allowable, and a notice of allowance is respectfully requested. If the Examiner has any questions regarding the application, the Examiner is invited to call the undersigned Attorney at (949)-955-1920

Respectfully submitted,

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